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NEW SPECIES OF DIATOMS.

BY CHARLES S. BOYER.

RHABDONEMA.

Rhabdonema Woolmanianum n. sp. Boyer.

Valve oblong, with sharply crenulate margin, punctate, the puncta in transverse rows, about 6 in .01 mm. Pseudoraphe indistinct. Septa perforate, connected with each other usually near alternate ends by straight transverse diaphragms.

L. of V. .155 mm. to .231 mm.

Fossil in the Miocene deposit from an artesian well at Asbury Park, N. J., at a depth of 40 ft. Not uncommon.

Approaches *R. hamuliferum* Kitton and *R. Musica* Brun., but it does not show either hooked septa as in the former nor curves resembling musical notes as in the latter. It also differs in the character of the margin and in size, being four or five times larger than either.

Plate XXIV, figs. 1, 1a, 1b.

BIDDULPHIA.

Biddulphia interrupta n. sp. Boyer.

Valve elliptical, with small, rounded processes. Surface convex, finely punctate, the puncta about 10 in .01 mm., radiating in scattered lines from the centre at which are three minute spines. About one-third the distance from centre to processes, at each end, a hyaline band produced by the interruption of puncta, crosses the valve transversely extending nearly to the sides.

L. of V. .112 mm.

Campeachy Bay. Rare.

Plate XXIV, fig. 2.

Biddulphia verrucosa n. sp. Boyer.

Valve suborbicular, convex. Processes very large, cylindrical, truncate. Surface coarsely reticulate, the reticulations unequal, irregular, about 2 in .01 mm. Within the reticulations are coarse puncta abont 3 in .01 mm.

L. of V. .138 mm.

Fossil at Redondo Beach, Cal. Very rare.

This form, which approaches the *Cerataulus* group, is distinguished by the incrusted or warty appearance of the surface.

Plate XXIV, fig. 5.

Biddulphia Keeleyi n. sp. Boyer.

Valve broadly rhombic-elliptical, rounded at the ends. Surface slightly convex, without depression, reticulated, the reticulations unequal, hexagonal, about 2 in .01 mm., with puncta within the reticulations about 8 in .01 mm. Three stout spines are placed on each side near the margin. Processes inflated at the base, small at the apex and placed not at the ends of the valve but obliquely opposite, near the ends.

L. of V. .148 mm.

U. S. S. "Tuscarora" Soundings, Lat. 36° 12′ N., Long. 123° 11′ W., 1,605 faths. Also coast of California. Rare.

Only two specimens have been noticed, one of which was found by Mr. F. J. Keeley on seaweed from California.

Plate XXIV, fig. 4.

Biddulphia Argus n. sp. Boyer.

Valve broadly elliptical, convex, with an elliptical depression at centre. Surface finely reticulate, the reticulations, more or less hexagonal, about 3 in .01 mm. at the border, and 5 in .01 mm. at the centre from which they radiate in curved lines. The central depression is encircled by from ten to twelve short spines. Processes rather short and obtuse.

L. of V. .165 mm.

Port Antonio, Jamaica. Not common.

Distinguished chiefly by the central spines and by the size of the reticulations, whence the name. It approaches *B. Roperiana* Grev.

Plate XXIV, fig. 6.

Biddulphia semicircularis Asburyana n. var. Boyer.

Valve arcuate with the ends produced and elevated into rounded processes. Surface not divided by costate lines, convex, punctate, the puncta rounded about 6 in .01 mm. near the hyaline excentric space from which they radiate irregularly, increasing in size to about 1½ in .01 mm. at the margin where they are irregular and occasionally confluent.

L. of V. .181 mm.

Fossil in the Miocene deposit from the artesian well at Asbury Park, N. J. at a depth of 40 ft. Not uncommon.

Quite distinct from *Euodia producta* Grun. and from *B. semicircularis* (Br.) in the irregularity of the produced ends, in their elevation into processes, in the size, shape and distribution of the puncta and in the absence of costæ.

Plate XXIV, fig. 3.

Biddulphia Shulzei n. sp. Boyer.

Valve elliptical, slightly raised toward the centre, with a large rounded process-like elevation at each end. Surface punctate, the puncta rounded, oblong, averaging 5 in .01 mm., but for the most part scattered, leaving numerous hyaline spaces, one of which appears as an indefinite, indistinct transverse band at the base of each process. Owing to the irregularity in the distribution of the puncta the circumference of the valve appears to show a scalloped border.

L. of V. .115 mm.

In the character of its markings it approaches *Tabulina Testudo* Brun. from which it is distinguished by having but two processes and in being without the hyaline lines which cross the valve in the latter.

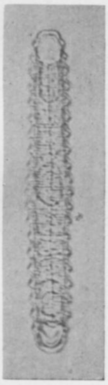
Fossil in the artesian well deposit at Weymouth, N. J. I have seen but one specimen which was found by Mr. John A. Shulze who also discovered a variety having two processes at one end and one at the other.

Plate XXIV, figs. 7, 8.

There appears to be no special reason why either this form or that known as *Tabulina Testudo* Brun. should be separated from the genus *Biddulphia*. The hyaline lines are not always definite even in *Tabulina Testudo*, while the variety in which but three processes appear clearly indicates an approach toward the type of *Biddulphia*.

EXPLANATION OF PLATE XXIV.

Fig. 1. Rhabdonema Woolmanianum Boyer, valve view. x 284.
Fig. 1a. Rhabdonema Woolmanianum, septum. x 284.
Fig. 1b. Rhabdonema Woolmanianum, zonal view. x 284.
Fig. 2. Biddulphia interrupta Boyer. x 310.
Fig. 3. Biddulphia semicircularis Asburyana Boyer. x 300.
Fig. 4. Biddulphia Keeleyi Boyer. x 300.
Fig. 5. Biddulphia verrucosa Boyer. x 302.
Fig. 6. Biddulphia Argus Boyer. x 330.
Fig. 7. Biddulphia Shulzei Boyer, var. x 475.
Fig. 8. Biddulphia Shulzei Boyer. x 475.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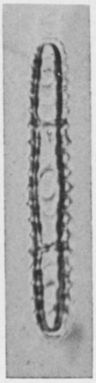
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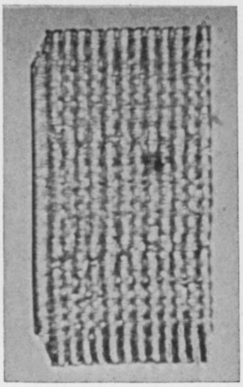
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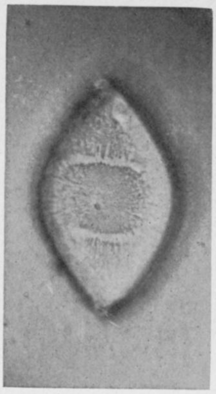
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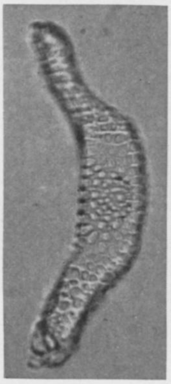
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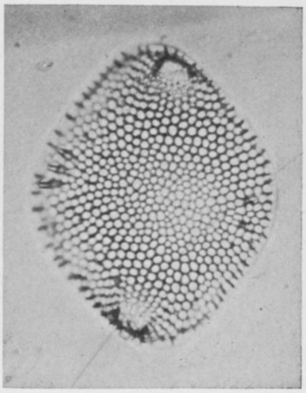
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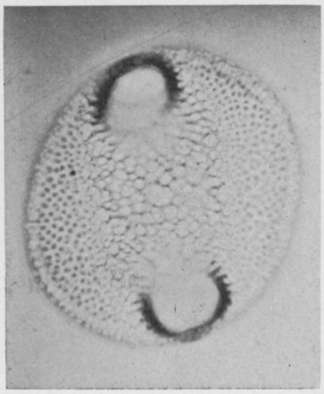
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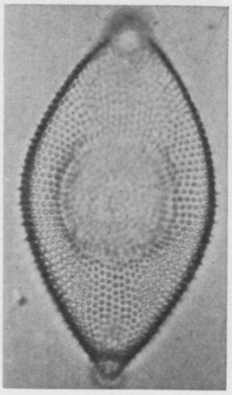
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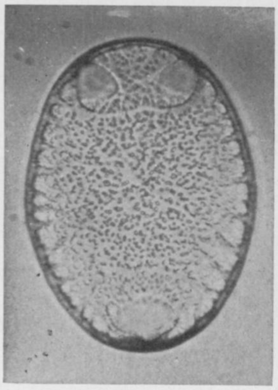
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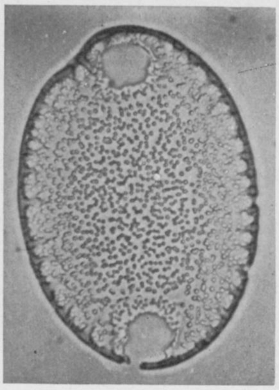
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BOYER ON DIATOMS.